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The time period for reply, if any, is set in the attached communication.

Applicant argues that the only separation stages taught by Hughes are in stage (iii) and stage (iii) does not treat a fermentation liquor.

However, stage (viii) of Hughes recite "separating the fermentation product from the broth characterized in that the separation stage(s) in step (iii) is/are assisted by flocculation of the solid by-product employing one or more flocculating agents … water-soluble polymers, water swellable polymers and charged particles“. Therefore Hughes teaches the claimed process.

Applicant argues that the combination of Verser, Coffey and Savage do not rendered the claim invention obvious.

However, Verser et al. teach a fermentation liquor (broth) produced in a fermentation process for the production of a fermentation product (ethanol and acetic acid), in which the liquor has been subjected to distillation (column 3 lines 38- 66, column 15 line 1-4, 27-29, and 64-67, column 16 lines 7-16). Verser et al. further teach the ethanol is removed from the water stream which is discharged from the column and separated by a simple liquid-solid separation into the solid base for recycle (column 16 lines 6-16, 22-30). Verser et al. teach the net effect of the reactive distillation process is to recover the acetic acid from the dilute salt solution thereby producing a relatively concentrated product stream, and without vaporizing the water that forms the bulk of the stream. The integration reduces the energy requirement, and simultaneous removal of the product shifts the esterification equilibrium and leads to higher conversion in a short time (column 16. lines 26-34).

Verser et al. do not teach the treatment system comprises an anionic polymer, the treatment system further comprises addition of a cationic polymers, and the treatment system further comprises addition of a siliceous material. However, Coffey et al. teach subjecting a liquid to a solid-liquid separation stage, the treatment system comprising polymers derived from cationic and anionic monomers, siliceous material, bentonite, and use of such polymers for displacing unwanted soluble or colloidal materials from an aqueous cellulosic suspension as well as to increase the efficiency of the dewatering, Coffey et al. also teach mechanical dewatering (press dewatering) (see Abstract, 0002, 0006, 0022-0029, 0030, 0031, 0075-0078, and 0108).

Moreover, Savage teaches a process of separating suspended solids (solid liquid separation) from a fermentation liquor by subjecting the liquor to treatment system comprising cationic and anionic polymers (flocculants) to clarify the fermentation liquor, acrylic acid, maleic acid (see Abstract, column 2, lines 52-67, and column 3, lines 6-9). Savage teaches synthetic polymer with an anionic monomer content of at least 50 wt% (about 5 to 95 mole %) (Column 2, lines 24).

Therefore, a person of ordinary skill in the art at the time the invention was made could have been motivated to modify the process of Verser et al. according to the teachings of Coffey et al. and Savage by applying the solid-liquid separation system in order to provide a process of separating suspended solids from fermentation liquor with predictable results. The motivation would be to improve the efficiency of the dewatering, and increase the efficiency of the process by lowering the cost and energy. The claims would have been obvious because one of ordinary skill in the art would have been

capable of applying a known solid-liquid separation technique to a known method that was ready for improvement and the results would have been predictable to one of ordinary skill in the art.